

CLAIM LISTING

This listing of claims will replace all prior versions and listings of claims in the application:

IN THE CLAIMS

Please cancel claim 8 without prejudice.

1. (Currently Amended) A computer-implemented method for developing a reusable electronic circuit design module, wherein the design module is comprised of one or more functional design elements comprising the design module, comprising:

- entering the functional design elements into a database;
- entering documentation elements into the database;
- linking the functional design elements with selected ones of the documentation elements;
- simulating a testbench with the design module, whereby simulation results are generated;
- storing the simulation results in the database; [[and]]
- linking the simulation results with the functional design elements;
- inspecting the functional design elements for associated documentation; and
- reporting documentation deficiencies in association with the functional design elements.

2. (Original) The method of claim 1, further comprising:

- translating the functional design elements into a netlist; and
- linking elements of the netlist with selected ones of the functional design elements.

3. (Original) The method of claim 2, further comprising:
translating the functional design elements into a physical implementation;
and
linking elements of the physical implementation with selected ones of the functional design elements.
4. (Original) The method of claim 1, further comprising:
entering simulation elements in the database; and
linking the simulation elements to associated ones of the design elements.
5. (Original) The method of claim 4, further comprising:
entering documentation for a design script in the database; and
linking the documentation of the design script to the design elements comprising the design module.
6. (Original) The method of claim 4, further comprising:
entering documentation for the simulation elements in the database; and
linking the documentation for the simulation elements with associated ones of the simulation elements.
7. (Currently Amended) The method of claim 6, further comprising:
inspecting the ~~functional design elements and~~ simulation elements for associated documentation; and
reporting documentation deficiencies in association with the ~~functional design elements and~~ simulation design elements.
8. (Cancelled)

9. (Original) The method of claim 1, further comprising:
inspecting the functional design elements for undesirable design characteristics; and
reporting the undesirable design characteristics found in the functional design elements.
10. (Original) The method of claim 9, further comprising:
inspecting the functional design elements for undesirable hierarchical characteristics; and
reporting discovered ones of the undesirable hierarchical characteristics.
11. (Original) The method of claim 9, further comprising:
inspecting the functional design elements for adherence to predefined design rules; and
reporting violations of the design rules.
12. (Original) The method of claim 11, further comprising providing assistance in specifying the design rules for the functional design elements.
13. (Original) The method of claim 9, further comprising:
monitoring changes made to the functional design elements; and
indicating which of the functional design elements are dependent on the changes.
14. (Original) The method of claim 1, further comprising:
translating the functional design elements into a physical implementation;
and
linking elements of the physical implementation with selected ones of the functional design elements.

15. (Original) The method of claim 1, further comprising requiring specification of parameters at a top level of a hierarchy of the design module.
16. (Original) The method of claim 1, further comprising displaying the functional design elements linked to errors in the simulation results.
17. (Original) The method of claim 16, further comprising displaying documentation elements associated with errors in the simulation results.
18. (Currently Amended) An apparatus for developing a reusable electronic circuit design module, wherein the design module is comprised of one or more functional design elements comprising the design module, comprising:
means for entering the functional design elements into a database;
means for entering documentation elements into the database;
means for linking the functional design elements with selected ones of the documentation elements;
means for simulating a testbench with the design module, whereby simulation results are generated;
means for storing the simulation results in the database; [[and]]
means for linking the simulation results with the functional design elements;
means for inspecting the functional design elements for associated documentation; and
means for reporting documentation deficiencies in association with the functional design elements.
19. (Currently Amended) A system for developing a reusable electronic circuit design module, wherein the design module is comprised of one or more functional design elements comprising the design module, comprising:
a database arranged for storage of the design elements and documentation elements;

a design inspector coupled to the database, the design inspector configured and arranged to link the functional design elements with selected ones of the documentation elements, inspect the functional design elements for associated documentation, and report documentation deficiencies in association with the functional design elements;

a debugging-support module coupled to the simulator and to the database, the debugging-support module configured and arranged to generate a netlist from the design module, wherein the netlist is suitable for simulation;

a functional simulator coupled to the debugging-support module, the simulator configured and arranged to simulate a testbench with the design module, whereby simulation results are generated; and

wherein the debugging-support module is further configured and arranged to store the simulation results in the database and link the simulation results with the functional design elements.

20. (New) A method for developing a reusable electronic circuit design module including a plurality of functional design elements, comprising:

entering the plurality of functional design elements in respective files of a database;

entering documentation elements into respective files of the database separate from the files having the functional design elements;

establishing links in the database between the files having functional design elements and the files having documentation elements;

storing a testbench in a file separate from the files having the functional design elements and the files having the design elements;

establishing at least one link in the database between at least one file having a functional design element and the file having the testbench;

simulating the testbench with the design module, whereby simulation results are generated;

storing the simulation results in at least one file in the database separate from the files having the functional design elements and the documentation elements; and

establishing at least one link in the database between the at least one file having the simulation results and the at least one file having a functional design element linked to the file having the testbench.

21. (New) The method of claim 20, further comprising:
translating the functional design elements into a netlist;
storing the netlist in a file separate from the files of the functional design elements, documentation, and test bench; and
establishing a plurality of links in the database between elements in files having the functional design elements and elements in the file having the netlist.

22. (New) The method of claim 21, further comprising:
translating the functional design elements into a physical implementation;
storing the physical implementation in a file separate from the files of the functional design elements, documentation, and test bench; and
establishing a plurality of links in the database between elements in files having the functional design elements and elements in the file having the physical implementation.

23. (New) The method of claim 20, further comprising:
entering simulation elements into respective files of the database separate from the files having the functional design elements, documentation elements and testbench; and
establishing links in the database between the files having functional design elements and the files having the simulation elements.

24. (New) The method of claim 23, further comprising:
entering documentation for a design script in a file in the database; and
establishing a link in the database between the file having the documentation
of the design script and the design elements comprising the design module.
25. (New) The method of claim 23, further comprising:
entering documentation for the simulation elements in respective files in the
database separate from the files of the simulation elements; and
establishing respective links in the database between the files having the
documentation for the simulation elements and the files having the simulation
elements.
26. (New) The method of claim 25, further comprising:
inspecting the functional design elements and simulation elements for
associated documentation; and
reporting documentation deficiencies in association with the functional
design elements and simulation design elements.
27. (New) The method of claim 20, further comprising:
inspecting the functional design elements for associated documentation; and
reporting documentation deficiencies in association with the functional
design elements.
28. (New) The method of claim 20, further comprising:
inspecting the functional design elements for undesirable design
characteristics; and
reporting the undesirable design characteristics found in the functional
design elements.

29. (New) The method of claim 28, further comprising:
inspecting the functional design elements for undesirable hierarchical characteristics; and
reporting discovered ones of the undesirable hierarchical characteristics.
30. (New) The method of claim 28, further comprising:
inspecting the functional design elements for adherence to predefined design rules; and
reporting violations of the design rules.
31. (New) The method of claim 30, further comprising providing assistance in specifying the design rules for the functional design elements.
32. (New) The method of claim 28, further comprising:
monitoring changes made to the functional design elements; and
indicating which of the functional design elements are dependent on the changes.
33. (New) The method of claim 20, further comprising:
translating the functional design elements into a physical implementation;
storing the physical implementation in a file separate from the files of the functional design elements, documentation, and test bench; and
establishing a plurality of links in the database between elements in files having the functional design elements and elements in the file having the physical implementation.
34. (New) The method of claim 20, further comprising requiring specification of parameters at a top level of a hierarchy of the design module.
35. (New) The method of claim 20, further comprising displaying the functional design elements linked to errors in the simulation results.

36. (New) The method of claim 35, further comprising displaying documentation elements associated with errors in the simulation results.
37. (New) An apparatus for developing a reusable electronic circuit design module including a plurality of functional design elements, comprising:
- means for entering the plurality of functional design elements in respective files of a database;
 - means for entering documentation elements into respective files of the database separate from the files having the functional design elements;
 - means for establishing links in the database between the files having functional design elements and the files having documentation elements;
 - means for storing a testbench in a file separate from the files having the functional design elements and the files having the design elements;
 - means for establishing at least one link in the database between at least one file having a functional design element and the file having the testbench;
 - means for simulating the testbench with the design module, whereby simulation results are generated;
 - means for storing the simulation results in at least one file in the database separate from the files having the functional design elements and the documentation elements; and
 - means for establishing at least one link in the database between the at least one file having the simulation results and the at least one file having a functional design element linked to the file having the testbench.

38. (New) A system for developing a reusable electronic circuit design module, wherein the design module is comprised of one or more functional design elements comprising the design module, comprising:

a database arranged for storage of the design elements and documentation elements in a plurality of files, wherein the files having the functional design elements are separate from the files having the documentation elements;

a design inspector coupled to the database, the design inspector configured and arranged to establishing links in the database between the files having the functional design elements and the files having the documentation elements;

a debugging-support module coupled to the simulator and to the database, the debugging-support module configured and arranged to generate a netlist from the design module, wherein the netlist is suitable for simulation;

a functional simulator coupled to the debugging-support module, the simulator configured and arranged to simulate a testbench with the design module, whereby simulation results are generated; and

wherein the debugging-support module is further configured and arranged to store the simulation results in at least one file in the database separate from the files having the functional design elements and the documentation elements and establish at least one link in the database between the at least one file having the simulation results and the at least one file having a functional design element linked to the file having the testbench.